

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 06 10 00 - Rough Carpentry
- .2 Section 07 92 00 - Joint Sealants
- .3 Section 07 46 13 - Preformed Metal Siding
- .4 Section 08 22 00 - FRP Doors and Frames
- .5 Section 08 50 00 - Windows

1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM D 4541-02, Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers.
 - .2 ASTM E 330-02, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls, by Uniform Static Air Pressure Difference.
 - .3 ASTM E 783-02, Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors.
 - .4 ASTM E 1186-03, Standard Practices for Air Leakage Site Detection in Building Envelope and Air Retarder Systems.

1.3 PERFORMANCE REQUIREMENTS

- .1 Walls - Sheet vapour permeable air barrier membranes with the following properties:
 - .1 Air Permeability to ASTM E2187 < 0.0024 s·m²
 - .2 Vapour permeance to ASTM E96 > 800 ng/Pa·s·m²
 - .3 Liquid water resistance to AATCC-127 > 5 Hours
 - .4 Peel Adhesion to ASTM D4541 > 100Kpa
 - .5 Tensile strength to ASTM D828 > 120 N.
 - .6 Frame spread to ASTM E84 = Class A Smoke Development Index = Class A
- .2 Sloping sections with vented soffits
 - .1 Sheet applied air and water barrier membrane - high temperature stable. Service temperature - 40 °C to 115 °, non-slip surface conforming to ASTM D1970-11.

- 1.4 SUBMITTALS
- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 35 33 - Health and Safety Requirements.
 - .3 Submittals: submit following in accordance with Section 01 33 00.
 - .1 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence, cleaning procedures.

- 1.5 MOCK-UP
- .1 Construct mock-up in accordance with Section 01 33 00
 - .2 Construct typical exterior wall panel, 5000 mm long by 3000 mm wide, incorporating window openings with frame and sill installed, insulation, building corner condition, junction with roof system and fiberglass column cover; illustrating materials interface and seals.
 - .3 Locate where directed by Departmental Representative.
 - .4 Refer to Section 08 50 00 - Windows for testing and verification requirements.
 - .5 Mock-up may remain as part of Work. Departmental Representative to determine.
 - .6 Allow 72 hours for review of mock-up by Departmental Representative prior to proceeding with air barrier installation.

- 1.6 DELIVERY, STORAGE AND HANDLING
- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
 - .2 Deliver, store and handle materials in accordance with manufacturer's written instructions.
 - .3 Avoid primer spillage, immediately notify Departmental Representative if spillage occurs and start clean up procedures.
 - .4 Clean spills and leave area as it was prior to spill.

- 1.7 WASTE MANAGEMENT AND DISPOSAL
- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .2 Place materials defined as hazardous or toxic waste in designated containers.
 - .3 Ensure emptied containers are sealed and stored safely for disposal away from children.
- 1.8 SEQUENCING
- .1 Sequence work to permit installation of materials in conjunction with related materials and seals.
- 1.9 WARRANTY
- .1 Provide two year warranty for sealant and sheet materials under provisions of Section 01 78 00 - Closeout Submittals.
 - .2 Warranty: include coverage of installed sealant and sheet materials which:
 - .1 Fail to achieve air tight and watertight seal.
 - .2 Exhibit loss of adhesion or cohesion.
 - .3 Do not cure.
- PART 2 - PRODUCTS
- 2.1 SUSTAINABLE REQUIREMENTS
- .1 Materials and products in accordance with Section 01 47 15 - Sustainable Requirements: Construction.
 - .2 Do verification requirements in accordance with Section 01 47 15 - Sustainable Requirements: Contractor's Verification.
- 2.2 MATERIALS
- .1 Materials: as required to achieve specified performance criteria; functionally compatible with adjacent materials and components. Refer to Paragraph 1.3 previous.
 - .2 Accessories:
 - .1 Tapes, sealants, transition membranes as recommended by air barrier manufacturer.
 - .2 Refer to air barrier manufacturer's standard installation instructions and details.

PART 3 - EXECUTION

- 3.1 MANUFACTURER'S INSTRUCTIONS .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.
- 3.2 PREPARATION .1 Prepare substrate surfaces in accordance with air barrier material manufacturer's instructions.
- 3.3 INSTALLATION .1 Install air barrier materials in accordance with manufacturer's instructions.
.2 Install sealant materials in accordance with manufacturer's instructions.
.3 Apply sealants within recommended application temperature ranges.
- 3.4 CLEANING .1 Proceed in accordance with Section 01 74 11 - Cleaning.
.2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.
- 3.5 PROTECTION OF FINISHED WORK .1 Protect finished work in accordance with Section 01 61 00 - Common Product Requirements.
.2 Do not permit adjacent work to damage work of this section.

END OF SECTION

2. SSSBI 20M-2008, Standard for Sheet Steel Cladding for Architectural, Industrial and Commercial Building Applications.
3. CSSBI B17-2002 Barrier Series Prefinished Sheet Steel Product Performance & Application.

1.3 SUBMITTALS

- .1 Product data: submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOC's for caulking materials during application and curing.
- .2 Shop Drawings:
 - .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Indicate dimensions, profiles, attachment methods, schedule of wall elevations, trim and closure pieces, soffits, fascia, metal furring, and related work.
- .3 Samples:
 - .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Submit duplicate 400 x 400 mm samples of siding material, profile specified with 100 x 100 flat samples of manufacturer's standard colours.
- .4 Manufacturer's Instructions:
 - .1 Submit manufacturer's installation instructions.

1.4 QUALITY ASSURANCE

- .1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements. Coordination with other building subtrades. Comply with Section 01 55 00-General Instructions.
- .4 Metal siding manufacturer shall have complete in-house production facilities and a minimum of five (5) years experience in manufacturing of architectural metal wall panel systems.

- .5 Installer shall be approved by panel manufacturer and have minimum of five (5) years experience in installation of architectural metal panel systems.
- .6 Shop tests are required to ensure dimensional and finish qualities are to specified standards.
- .7 Obtain material from single manufacturer.
- .8 The drawings indicate the general arrangement of the work, the dimensions, and the major architectural and structural elements of construction. The drawings and specifications do not necessarily indicate or describe all items required for the full performance and completion of the work of this Section.

1.5 DESIGN
RESPONSIBILITY

- .1 The design, fabrication and erection of the metal siding shall be the complete responsibility of the Contractor.
- .2 Design requirements include but are not necessarily limited to the design and sizing of all metal siding, connection hardware including supporting track members, all anchors, fasteners, clips and girts as required for the proper anchorage of the siding to the building structure, even though not indicated on the drawings or specified. Connection hardware shall be of material and design that is compatible with the metal siding system.
- .3 The metal siding details shown are included for the purpose of indicating the preferred profiles and dimensions necessary to achieve the design intent and are not intended to eliminate other design proposals. Minimal dimension adjustments to that shown may be made in the proposed design in the interest of fabrication or erection methods or techniques, the weatherability factor, provided that the design intent and the intent of the specifications are maintained.
- .4 The connection details and attachment hardware shown are diagrammatic only and are included for purpose of indicating the preferred dimensions and are not intended to eliminate other connection details or hardware attachment proposals.
- .5 The Departmental Representative's review of any and all items designated in this specification will be done with the understanding and assurance that the Contractor is fully responsible for the performance of all work covered in this section.

1.6 DESIGN AND PERFORMANCE REQUIREMENTS

- .1 The following criteria shall be used in design of the preformed metal siding system.
 - .1 Siding, connection and attachment hardware, suspension systems and fasteners shall be designed to accommodate expansion and contraction.
 - .2 Connection and attachment hardware shall not cause staining to siding or to other adjoining materials.
 - .3 Labels and trademarks, including applied labels, shall not be visible on the finished work.
 - .4 There shall be no oil canning, warping or buckling of siding faces, including when panels are under full design loads.
 - .5 Siding system shall provide and/or make allowances for free and noiseless vertical and horizontal thermal movement, due to the contraction and expansion of any or all component parts of the cladding system. Buckling, opening of joints, undue stress on fasteners, failure of sealants or any other detrimental effects due to the thermal movement of any or all component parts will not be accepted.
 - .6 The deflection of the components of the siding system shall be limited as required to prevent any adverse effects on the watertight integrity of the system assembly or on any related component.
 - .7 All materials, recommendations and details describing the proposed use, design and application procedures for all anchorage shall be documented and fully described in the shop drawings.
- .2 Reference to products does not relieve the manufacturer of responsibility to comply fully with all specified criteria.

1.7 SUBMITTALS

- .1 Submittals to be made in accordance with Section 01 33 00-Submittals Procedures.
- .2 Shop Drawings
 - .1 Indicate dimensions, profiles, attachment methods, schedule of wall elevations, trim and closure pieces, soffits, fascias, metal furring, and related work.
- .3 Samples
 - .1 Submit samples of wall system specified before proceeding with the work, showing proposed method of shaping, forming, jointing and fastening.
 - .2 Submit minimum 50 mm x 100 mm sample of siding material, of colour and profile specified.
 - .3 Submit samples if approval of substitutions is requested.

1.8 MOCK-UP

- .1 Assemble a full-size mock-up of preformed metal siding system on the project site for review by the Departmental Representative. Exact area for assembly will be determined by the Departmental Representative. Mock-up shall include all components of the system, including typical joints and connection hardware, and typical tie-ins to adjoining systems, all finished as specified.
- .2 Locate where directed by Departmental Representative.
- .3 Allow for review of mock-up by the Departmental Representative before proceeding with air barrier work.
- .4 Mock-up may remain as part of the Work.

1.9 WASTE
MANAGEMENT AND
DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
- .2 Divert used metal cut-offs from landfill by disposal into the on-site metals recycling bin removed for disposal at the nearest metal recycling facility.
- .3 Divert reusable materials for reuse at nearest used building materials facility.
- .4 Divert unused caulking, sealants, and adhesive materials from landfill through disposal at hazardous material depot.

PART 2 - PRODUCTS2.1 STEEL CLADDING
AND COMPONENTS

- .1 Strip siding: to CGSB 93.4, Type A and B vertical, Class 1 plain.
 - .1 Finish coating: Class F2S. Polyvinylidene fluoride (PVDF) on both sides. Minimum coating thickness 0.051 mm.
 - .2 Colour: Two colours selected by Departmental Representative.
 - .3 Gloss: medium.
 - .4 Thickness: 22 ga. AZM180 galvalume base metal thickness.
 - .5 Backing: AZM180 galvalume hat track as required. Prefinished with PVDF 0.051 mm coating.
 - .6 Profile: Diamond rib as detailed, 35 mm deep, preformed interlocking joints, fastener holes pre-punched.
- .2 Soffit: to CGSB 93.4, Class 1 plain:
 - .1 Finish coating: Class F2S. Polyvinylidene fluoride (PVDF) on both sides. Minimum coating thickness 0.051 mm.
 - .2 Colour: colour selected by Departmental Representative.
 - .3 Gloss: medium.
 - .4 Thickness: 22 ga. AZM180 galvalume base metal thickness.
 - .5 Backing: AZM180 galvalume hat track as required. Prefinished with PVDF 0.051 mm thick coating
 - .6 Profile: same as siding.
- .3 Fascia facings and exposed trim: to CGSB 93.4, Class 1 plain:
 - .1 Finish coating: Class F2S.
 - .2 Colour: Two colours selected by Departmental Representative
 - .3 Gloss: medium.
 - .4 Thickness: 0.61 mm AZM galvalume base metal thickness, prefinished with PVDF 0.051 mm thick coating.
 - .5 Profile: custom and manufacturer's standard as indicated.

2.3 ACCESSORIES

- .1 Exposed trim: inside corners, outside corners, cap strip, drip cap, under-sill trim, starter strip and window/door trim of same material, colour and gloss as cladding, with fastener holes pre-punched.
- .2 Non-exposed accessories: AZM180 galvalume material prefinished with PVDF 0.051 mm thick coating is required for all furring.
- .3 Pre-finished 100mm wide aluminum expanded metal mesh continuous soffit vent strip complete with nylon insect screen.

2.4 FASTENERS

- .1 Screws: ANSI B18.6.4. Purpose made stainless steel.

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 07 46 13 – Performed Metal Siding
- .2 Section 08 50 00 – Windows
- .3 Section 08 22 00 - Fiberglass Reinforced Plastic (FRP) Doors & Frames.

1.2 REFERENCES

- .1 The Aluminum Association Inc. (AAI)
 - .1 AAI-Aluminum Sheet Metal Work in Building Construction-2002.
 - .2 AAI DAF45-03, Designation System for Aluminum Finishes.
- .2 American Society for Testing and Materials International (ASTM)
 - .1 ASTM A 167-99(2004), Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - .2 ASTM A 240/A 240M-07e1, Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
 - .3 ASTM A 606-04, Standard Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance.
 - .4 ASTM A 653/A 653M-07, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .5 ASTM A 792/A 792M-06a, Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
 - .6 ASTM B 32-04, Standard Specification for Solder Metal.
 - .7 ASTM B 370-03, Standard Specification for Copper Sheet and Strip for Building Construction.
 - .8 ASTM D 523-89(1999), Standard Test Method for Specular Gloss.
 - .9 ASTM D 822-01(2006), Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.
- .3 Canadian Roofing Contractors Association (CRCA)
 - .1 Roofing Specifications Manual 2011.
- .4 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-51.32-M77, Sheathing, Membrane, Breather Type.

- .2 CAN/CGSB-93.1-M85, Sheet Aluminum Alloy, Prefinished, Residential.
- .5 Canadian Standards Association (CSA International)
 - .1 CSA A123.3-05, Asphalt Saturated Organic Roofing Felt.
 - .2 AAMA/WDMA/CSA 101/I.S.2/A440, Standard/Specification for Windows, Doors, and Unit Skylights.
 - .3 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.
- .6 Green Seal Environmental Standards
 - .1 Standard GS-03-93, Anti-Corrosive Paints.
 - .2 Standard GS-11-97, Architectural Paints.
 - .3 Standard GS-36-00, Commercial Adhesives.
- .7 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .8 South Coast Air Quality Management District (SCAQMD), California State
 - .1 SCAQMD Rule #1113-04, Architectural Coatings.
 - .2 SCAQMD Rule #1168-05, Adhesives and Sealants.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's printed product literature for sheet metal flashing systems materials, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit two copies WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 35 33- Health and Safety Requirements
- .3 Samples:
 - .1 Submit duplicate 300 x 300 mm samples of each type of sheet metal material, finishes and colours.
- .4 Quality assurance submittals: submit following in accordance with Section 01 11 55
 - .1 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence, cleaning procedures.

1.4 QUALITY ASSURANCE

- .1 Pre-Installation Meetings: convene pre-installation meeting one week prior to beginning work of this Section and on-site installation, with contractor's representative and Departmental Representative to:
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Co-ordination with other building subtrades.
 - .4 Review manufacturer's installation instructions and warranty requirements.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Waste Management and Disposal:
 - .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

PART 2 - PRODUCTS

2.1 PREFINISHED STEEL SHEET

- .1 Prefinished galvalume with factory applied Polyvinylidene fluoride (PVDF) on both sides. Minimum coating thickness 0.051 mm.
 - .1 Class F2S.
 - .2 Two colours selected by Departmental Representative from manufacturer's standard range.
 - .3 Specular gloss: 30 units +/- in accordance with ASTM D 523.
 - .4 Coating thickness: not less than 0.051mm
 - .5 Resistance to accelerated weathering for chalk rating of 8, colour fade 5 units or less and erosion rate less than 20 % to ASTM D 822 as follows:
 - .1 Outdoor exposure period 5000 hours.
 - .2 Humidity resistance exposure period 5000 hours.
- .2 Prefinished steel with factory applied polyvinylidene fluoride (PVDF).
 - .1 Class F2S
 - .2 Two colours selected by Departmental Representative from manufacturer's standard range.
 - .3 Specular gloss: 30 units +/- 5 in accordance with ASTM D 523.
 - .4 Coating thickness: not less than 0.051mm.

.5 Resistance to accelerated weathering for chalk rating of 8, colour fade 5 units or less and erosion rate less than 20 % to ASTM D822 as follows:

- .1 Outdoor exposure period 5000 hours.
- .2 Humidity resistance exposure period 5000 hours.

2.2 ACCESSORIES

- .1 Isolation coating: alkali resistant bituminous paint.
- .2 Plastic cement: to CAN/CGSB 37.5.
 - .1 Maximum VOC limit 50 g/L to SCAQMD Rule 1168 to GSES GS-36.
- .3 Underlay for metal flashing: dry sheathing to CAN/CGSB-51.32 asphalt laminated 3.6 to 4.5 kg kraft paper No. 15 perforated asphalt felt to CSA A123.3.
- .4 Sealants: See Section 07 92 00 - Joint Sealants.
 - .1 Maximum VOC limit 50 g/L to SCAQMD Rule 1168 to GSES GS-36.
- .5 Cleats: of same material, and temper as sheet metal, minimum 50 mm wide. Thickness: same as sheet metal being secured.
- .6 Fasteners: stainless steel screws suitable for metal flashing application, to ANSI B18.6.4
- .7 Washers: of same material as sheet metal, 1 mm thick with rubber packings.
- .9 Flux: rosin, cut hydrochloric acid, or commercial preparation suitable for materials to be soldered.
- .10 Touch-up paint: as recommended by prefinished material manufacturer.
 - .1 Maximum VOC limit 150 g/L to Standard GS-11 to SCAQMD Rule 1113.

- 2.3 FABRICATION
- .1 Fabricate metal flashings and other sheet metal work in accordance with applicable CRCA 'FL' series details as indicated.
 - .2 Fabricate aluminum flashings and other sheet aluminum work in accordance with AAI-Aluminum Sheet Metal Work in Building Construction.
 - .3 Form pieces in 2400 mm maximum lengths.
 - .1 Make allowance for expansion at joints.
 - .4 Hem exposed edges on underside 12 mm.
 - .1 Miter and seal corners with sealant.
 - .5 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.
 - .6 Apply isolation coating to metal surfaces to be embedded in concrete or mortar.
- 2.4 METAL FLASHINGS
- .1 Form flashings, copings and fascias to profiles indicated of 0.79 mm thick galvalume prefinished steel.
 - .2 Form end dams with "dog-ear" corners at sills and head flashing.
 - .3 Form cap flashings with standing seams. Other flashing to be formed with S-lock seams.
- 2.5 PANS
- .1 Form pans to receive roofing plastic from 1.3 mm thick copper sheet metal with minimum 75 mm upstand above finished roof and 100 mm continuous flanges with no open corners.
 - .1 Solder joints.
 - .2 Make pans minimum 50 mm wider than member passing through roof membrane.
- 2.6 REGLETS AND CAP FLASHINGS
- .1 Form surface mounted metal cap flashing of 0.61 mm thick sheet metal.
 - .1 Provide slotted fixing holes and steel/plastic washer fasteners.
- 2.7 EAVES TROUGHS AND DOWNPIPES
- .1 Form eaves troughs and downpipes from 20 ga. thick galvalume prefinished steel.
 - .2 Sizes and profiles as indicated.

- .3 Provide goosenecks, outlets, strainer baskets and necessary fastenings.
- .4 Form 600 x 600 mm splash pans from 50 mm thick concrete.

2.8 SCUPPERS

- .1 Form scuppers from 16 oz. thick 4.87 kg/m² copper.
- .2 Sizes and profiles as indicated.
- .3 Provide necessary fastenings.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 INSTALLATION

- .1 Install sheet metal work in accordance with CRCA FL series details, FL AAI-Aluminum Sheet Metal Work in Building Construction as detailed.
- .2 Use concealed fastenings except where approved before installation.
- .3 Provide underlay under sheet metal.
 - .1 Secure in place and lap joints 100 mm.
- .4 Counter flash bituminous flashings at intersections of roof with vertical surfaces and curbs.
 - .1 Flash joints using S-lock seams forming tight fit over hook strips at vertical and sloping surfaces (between 90 and 45 degrees), complete with standing seam at horizontal and sloping surfaces (between zero and 45 degrees), at corners, "dog-ear" corners at end dams.
- .5 Lock end joints and caulk with sealant.
- .6 Insert metal flashing under cap flashing to form weather tight junction.

3.3 EAVES TROUGHS AND DOWNPIPES

- .1 Install eaves troughs and secure to building at 750 mm on centre with mechanical fasteners through spacer ferrules.
 - .1 Slope eaves troughs to downpipes as indicated.

- .2 Seal joints watertight.
 - .2 Install downpipes and provide goosenecks back to wall.
 - .1 Secure downpipes to wall with straps at 1000 mm on centre; minimum three straps per downpipe.
 - .2 Connect downpipes to splash pad and seal joint with plastic cement.
 - .3 Install concrete splash pads.
- 3.4 SCUPPERS
- .1 Install one overflow scupper at lower roof as indicated.
- 3.5 FIELD QUALITY CONTROL
- .1 Manufacturer's Field Services:
 - .1 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
- 3.6 CLEANING
- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
 - .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.
 - .3 Leave work areas clean, free from grease, finger marks and stains.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED
REQUIREMENTS

- .1 Section 07 27 00.02 - Air barriers – Performance
- .2 Section 07 46 13 - Preformed Metal Siding
- .3 Section 07 62 00 - Sheet Metal Flashing and Trim
- .4 Section 08 16 00 - Fiber glass Doors and Frames
- .5 Section 08 36 13.02 - Sectional Metal Doors
- .6 Section 08 50 00 - Windows

1.2 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM C 919-02, Standard Practice for Use of Sealants in Acoustical Applications.
- .2 Canadian General Standards Board (CGSB)
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .4 Transport Canada (TC)
 - .1 Transportation of Dangerous Goods Act, 1992 (TDGA).

1.3 ACTION AND
INFORMATIONAL
SUBMITTALS

- .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Manufacturer's product to describe.
 - .1 Caulking compound.
 - .2 Primers.
 - .3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.
- .3 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .4 Submit duplicate samples of each type of material and colour.
- .5 Cured samples of exposed sealants for each color where required to match adjacent material.
- .6 Submit manufacturer's instructions in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Instructions to include installation instructions for each product used.

1.4 QUALITY
ASSURANCE/MOCK-UPS

- .1 Construct mock-up to show location, size, shape and depth of joints complete with back-up material, primer, caulking and sealant.
- .2 Mock-up will be used:
 - .1 To judge workmanship, substrate preparation, operation of equipment and material application.
- .3 Locate where directed by Departmental Representative.
- .4 Allow 72 hours for inspection of mock-up by Departmental Representative before proceeding with sealant work.
- .5 When accepted, mock-up will demonstrate minimum standard of quality required for this Work. Approved mock-up may not remain as part of finished Work. Remove mock-up and dispose of materials when no longer required and when directed by Departmental Representative.

1.5 DELIVERY,
STORAGE, AND
HANDLING

- .1 Deliver, handle, store and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.

1.6 WASTE
MANAGEMENT AND
DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Construction/Demolition Waste Management And Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper plastic polystyrene corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.
- .4 Place materials defined as hazardous or toxic in designated containers.
- .5 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.
- .6 Unused sealant material must not be disposed of into sewer system,

into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.

- .7 Divert unused joint sealing material from landfill to official hazardous material collections site approved by Departmental Representative.
- .8 Empty plastic joint sealer containers are not recyclable. Do not dispose of empty containers with plastic materials destined for recycling.
- .9 Fold up metal banding, flatten, and place in designated area for recycling.

1.7 SITE CONDITIONS

- .1 Environmental Limitations:
 - .1 Do not proceed with installation of joint sealants under following conditions:
 - .1 When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 5 degrees C.
 - .2 When joint substrates are wet.
- .2 Joint-Width Conditions:
 - .1 Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.
- .3 Joint-Substrate Conditions:
 - .1 Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

1.8 ENVIRONMENTAL REQUIREMENTS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labeling and provision of Material Safety Data Sheets (MSDS) acceptable to Labour Canada.
- .2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.
- .3 Departmental Representative will arrange for ventilation system to be operated on maximum outdoor air and exhaust during indoor installation of sealants. Ventilate area of work as directed by Departmental Representative by use of approved portable supply and exhaust fans.

PART 2 - PRODUCTS

2.1 SEALANT
MATERIALS

- .1 When low toxicity caulks are not possible, confine usage to areas which off-gas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off-gas time.
- .2 Where sealants are qualified with primers use only these primers.

2.2 SEALANT
MATERIAL
DESIGNATIONS

- .1 Urethanes Two Part.
 - .1 Self-Leveling to CAN/CGSB-19.24, Type 1, Class B, colour -to be confirmed by Departmental Representative.
- .2 Urethanes Two Part.
 - .1 Non-Sag to CAN/CGSB-19.24, Type 2, Class B, colour to be confirmed by Departmental Representative.
- .3 Silicones One Part – Neutral Cure
 - .1 To CAN/CGSB-19.13.
- .4 Acoustical Sealant.
 - .1 To ASTM C 919.
- .5 Butyl.
 - .1 To CGSB 19-GP-14M.
- .6 Preformed Compressible and Non-Compressible back-up materials.
 - .1 Polyethylene, Urethane, Neoprene or Vinyl Foam.
 - .1 Extruded open closed cell foam backer rod.
 - .2 Size: oversize 30 to 50 %.
 - .3 Neoprene or Butyl Rubber.
 - .1 Round solid rod, Shore A hardness 70.
 - .4 High Density Foam.
 - .1 Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, extruded polyolefin foam, 32 kg/m³ density, or neoprene foam backer, size as recommended by manufacturer.
 - .5 Bond Breaker Tape.
 - .1 Polyethylene bond breaker tape which will not bond to sealant.

- 2.3 SEALANT SELECTION
- .1 Perimeters of exterior openings where frames meet exterior facade of building (i.e. metal cladding or trim : Sealant type: Silicone One Part.
 - .2 Seal interior perimeters of exterior openings as detailed on drawings: Sealant type: Silicone One Part
 - .3 Exposed interior control joints in drywall: Sealant type: Urethane Two Part
 - .4 Preformed Metal Siding and Sheet Metal Flashing and Trim: Silicone One Part.
- 2.4 JOINT CLEANER
- .1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.
 - .2 Primer: as recommended by manufacturer.
- PART 3 - EXECUTION
- 3.1 PROTECTION
- .1 Protect installed Work of other trades from staining or contamination.
- 3.2 SURFACE PREPARATION
- .1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.
 - .2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.
 - .3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
 - .4 Ensure joint surfaces are dry and frost free.
 - .5 Prepare surfaces in accordance with manufacturer's directions.
- 3.3 PRIMING
- .1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.
 - .2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

- 3.4 BACKUP MATERIAL
 - .1 Apply bond breaker tape where required to manufacturer's instructions.
 - .2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

- 3.5 MIXING
 - .1 Mix materials in strict accordance with sealant manufacturer's instructions.

- 3.6 APPLICATION
 - .1 Sealant.
 - .1 Apply sealant in accordance with manufacturer's written instructions.
 - .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
 - .3 Apply sealant in continuous beads.
 - .4 Apply sealant using gun with proper size nozzle.
 - .5 Use sufficient pressure to fill voids and joints solid.
 - .6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
 - .7 Tool exposed surfaces before skinning begins to give slightly concave shape.
 - .8 Remove excess compound promptly as work progresses and upon completion.
 - .2 Curing.
 - .1 Cure sealants in accordance with sealant manufacturer's instructions.
 - .2 Do not cover up sealants until proper curing has taken place.
 - .3 Cleanup.
 - .1 Clean adjacent surfaces immediately and leave Work neat and clean.
 - .2 Remove excess and droppings, using recommended cleaners as work progresses.
 - .3 Remove masking tape after initial set of sealant.

END OF SECTION